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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KOUYA FUKUI

Appeal 2009-009517
Application 10/756,407
Technology Center 1700

Decided: January 13, 2010

Before EDWARD C. KIMLIN, TERRY J. OWENS, and MARK NAGUMO, *Administrative Patent Judges*.

Opinion for the Board filed by KIMLIN, *Administrative Patent Judge*.

Opinion concurring filed by NAGUMO, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1-4, 6, 7, and 10-19. We have jurisdiction over the appeal pursuant to 35 U.S.C. § 6. Claim 1is illustrative:

1. A photothermographic material, comprising:

a support;

an image forming layer disposed on the support and containing a photosensitive silver halide, a non-photosensitive organic silver salt, a reducing agent, and a binder; and

a silver-saving agent,

wherein silver iodide is contained in the photosensitive silver halide in an amount of 40 to 100 mol%,

wherein an image gradation of an image obtained by heat development is 2 to 4, the image graduation being expressed as the gradient between optical densities 2.0 and 0.25 of a characteristic curve as represented by the following equation:

Gamma = (Optical density 2.0 – Optical density 0.25) / (log (Fog density + Exposure amount providing an optical density of 2.0) – log (Fog density + Exposure amount providing an optical density of 0.25), and

wherein the photothermographic material is sensitive to a laser light source having a wavelength of 350 nm to 450 nm.

The Examiner relies upon the following references as evidence of obviousness:

Siga	4,332,889	Jun. 1, 1982
Hirabayashi	2002/0123016 A1	Sep. 5, 2002
Yanagisawa	EP 1 168 066 A2	Jan. 2, 2002

Appellant's claimed invention is directed to a photothermographic material having an image forming layer comprising, inter alia, a photosensitive silver halide and a silver-saving agent. The silver halide comprises silver iodide in an amount of 40 to 100 mol%. The image

gradation of an image obtained by subjecting the material to heat development is 2 to 4.

Appealed claims 1-4, 6, 7, and 10-19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over EP '066 in view of Siga and Hirabayashi.

Appellant has not set forth an argument that is reasonably specific to any particular claim on appeal. Accordingly, all the appealed claims stand or fall together with claim 1.

We have thoroughly reviewed each of Appellant's arguments for patentability, as well as the Declaration evidence relied upon in support thereof. However, we are in complete agreement with the Examiner that the claimed subject matter would have been obvious to one of ordinary skill in the art within the meaning of § 103 in view of the applied prior art. Accordingly, we will sustain the Examiner's rejection for essentially those reasons expressed in the Answer, and we add the following primarily for emphasis.

There is no dispute that EP '066, like Appellant, discloses a photothermographic material containing a photosensitive silver halide, a non-photosensitive organic silver salt, a reducing agent, a binder and a silver-saving agent, which material, upon heat development, exhibits an average contrast of 2.0 to 6.0, a range which totally embraces the presently claimed range of 2 to 4. As recognized by the Examiner, EP '066 does not expressly disclose that the photosensitive silver halide has a silver iodide content in the claimed range of 40 – 100 mol%. However, the reference discloses that the halide composition of the silver halide may be silver iodide, which teaching would have strongly suggested to one of ordinary

skill in the art that the silver iodide content of the silver halide may be 100 mol% (*see* page 5, lines 23-25). Accordingly, we find no error in the Examiner's conclusion that it would have been obvious for one of ordinary skill in the art to formulate a photothermographic material in accordance with the teachings of EP '066 wherein the photosensitive silver halide comprises an amount of silver iodide within the claimed range.

Also, we agree with the Examiner that Siga underscores the obviousness of using silver iodide as the photosensitive silver halide in the photothermographic material of EP '066. As pointed out by the Examiner, Siga evidences that it was known in the art that "[s]ilver iodide is superior in thermal stability to silver bromide and silver chloride" (col. 5, ll. 11-12). In addition, Siga teaches that the molar ratio of silver iodide to silver bromide in a photothermographic material is more preferably 50/50 to 95/50, which ratios fall directly within the claimed range of 40-100 mol% (*see* col. 6, ll. 66-68). Consequently, based on the state of the prior art, we have no doubt that one of ordinary skill in the art would have found it obvious to make a photothermographic material encompassed by the appealed claims, particularly a photosensitive silver halide which comprises 40 – 100 mol% silver iodide.

We are not persuaded by Appellant's argument that Siga is not combinable with EP '066 because Siga is directed to a post-activation type photothermographic material whereas EP '066 is directed to a conventional type that requires no pre-heating. Appellant cites Siga at column 2, lines 20-30 for the teaching that post-activation type of dry image forming materials are quite different in conditions of storage and image formation from common heat-developable dry image forming materials. However, we agree

with the Examiner that when the entirety of Siga's relevant disclosure is considered, it becomes clear that the reference is speaking to the unpredictability of the effect of additives, specifically, spectral sensitizing dyes, in post-activation type dry image forming materials. Siga gives no indication that the superior thermal stability of silver iodide is in anyway affected by its use in either type of photothermographic material. EP '066 suggests the exclusive use of silver iodide as the silver halide photosensitive material, and we agree with the Examiner that one of ordinary skill in the art would have reasonably expected silver iodide to lend thermal stability to the referenced photothermographic material. We note that the Declaration of the present inventor provides no statement that one of ordinary skill in the art would have found it unexpected that the silver iodide of EP '066 provides such thermal stability.

As for the claimed photothermographic material being sensitive to a laser light having a wavelength within the claimed range, EP '066 teaches that laser light, in general, is suitable for recording an image on the photothermographic material ([0011]), and that sensitizing dyes for the material are selected that exhibit spectral sensitivity suitable for the spectral characteristics of various laser images ([0116]). Appellant has not asserted that any unexpected advantage attaches to using the claimed laser light source and, as set forth by the Examiner, Hirabayashi evidences that it was known in the art to employ photothermographic materials having an adsorption maximum at a wavelength within the claimed range. Indeed, Hirabayashi teaches that using a laser light source having a wavelength within the claimed range results in superior images to those obtained by the commonly known long wave laser ([0005]). Also, contrary to Appellant's

argument, the disclosures of EP '066 and Hirabayashi are not limited to medical applications and printing, respectively.

Appellant relies upon the Fukui Declaration as evidence of unexpected results. The Declaration demonstrates that the use of silver iodide content below the claimed range, namely, 35 and 10 mol%, results in inferior unprocessed stock storability and image storability. The declarant states "[i]t is totally unexpected for one skilled in the art at the time the invention was made that photothermographic material that employs a silver halide emulsion having a high silver iodide content of 40 mol% or more achieves significantly improved effects by adding a silver saving agent without deteriorating unprocessed stock storability and image storability (improvement in print-out performance)" (Decl. 5, first para.).

We concur with the Examiner that Appellant has not shouldered the burden of establishing that the evidence of nonobviousness outweighs the evidence of obviousness for the claimed subject matter. As evidenced by EP '066 and Siga, it was well known in the art to make a photothermographic material comprising a photosensitive silver halide containing silver iodide exclusively or within the claimed range, and it was known that silver iodide provides thermal stability for the material. As pointed out by the Examiner, the Declaration data shows no improvement in the photographic properties Dmax gradation and tone, or in brittleness, when an amount of silver iodide within the claimed range is used. Improved results are shown for the properties of unprocessed stock storability and image storability. However, the Declaration agrees with the Examiner's assessment that the demonstrated improvement in unprocessed stock storability would have been expected by one of ordinary skill in the art when using a higher amount of silver iodide.

In particular, the Declarant states that Siga discloses that a silver halide containing high silver iodide provides high sensitivity and improved raw storability (Decl. 5, 3rd para.).

Also, while the Declarant explains the difference between raw storability pertaining to unexposed/undeveloped material and image stability, the Declarant does not rebut the Examiner's reasonable position that one of ordinary skill in the art would have expected that the known thermal stability imparted by silver iodide would translate to developed material that may also comprise unexposed silver iodide.

Hence, to the extent that the improvement in image storability would be considered unexpected, it is our judgment that, on balance, the evidence for the obviousness of using silver iodide in the claimed amount outweighs the evidence of nonobviousness. *In re May*, 574 F.2d 1082, 1092 (CCPA 1978); *In re Nolan*, 553 F.2d 1261, 1267 (CCPA 1977). Also, it is well settled that it is not necessary for a finding of obviousness that all the advantages of a claimed invention are recognized by the prior art, and it is not necessary for such finding that the motivation of one of ordinary skill in the art be the same as the applicant's motivation. *See In re Kemps*, 97 F.3d 1427, 1430 (Fed. Cir. 1996); *In re Dillon*, 919 F.2d 688, 693 (Fed. Cir. 1990).

Furthermore, Appellant has not refuted the Examiner's legitimate criticisms of the Declaration data set forth at pages 9-14 of the Answer. For instance, the Declaration fails to provide a valid side-by-side comparison between materials within the scope of the appealed claims and those offered for comparison comprising amounts of silver iodide outside the claim range. *See In re Heyna*, 360 F.2d 222, 228 (CCPA 1966); *In re Dunn*, 349 F.2d

433, 439 (CCPA 1965). In particular, the Examiner finds that samples 3a – 3d of the present invention contain a silver halide emulsion that is a mixture of three emulsions 1, 2, and 3 that have specified silver halide grains having a mean sphere equivalent diameter of 0.004 micron, and a variation coefficient of sphere equivalent diameter 18 %, and emulsion 2 comprises silver iodide tabular grains having a specified means circular equivalent diameter of projection, grain thickness, aspect ratio, mean sphere equivalent diameter, and a variation coefficient of sphere equivalent, and that Emulsion 3 is similarly described. On the other hand, the Examiner finds that emulsion J used for comparative sample 113 and inventive samples 114a – 114d, and emulsion L for comparative sample 117 and inventive samples 118a – 118d, are not afforded a description of their characteristics. This lack of information is significant since, as noted by the Examiner, EP '066 teaches that the size of the silver halide has an impact on the photothermographic material with respect to minimizing cloudiness after image formation and obtaining excellent image quality.

In addition, for the reasons set forth a pages 12-13 of the Answer, Appellant has not carried the burden of establishing that the declaration data is reasonably commensurate in scope with the degree of protection sought by the appealed claims nor represents a comparison with the closest prior art. Appellant has advanced no argument in rebuttal to the Examiner's analysis.

In conclusion, based on the foregoing and the reasons well stated by the Examiner, it is our judgment that the evidence of obviousness presented by the Examiner outweighs the evidence of nonobviousness advanced by Appellant. Accordingly, the Examiner decision rejecting the appealed claims is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

NAGUMO, *Administrative Patent Judge*, concurring.

I concur. I write separately only to emphasize that, in my view, the teachings of EP `066 suffice to support the obviousness of a photosensitive silver halide comprising silver iodide within the range recited in claim 1. In this light, Appellant has not shown that the Examiner's reliance on Siga constitutes harmful error.

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